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AUTHOR	Nelson, J. Ron
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ABSTRACT

This report summarizes the procedures and results from a 3-year research project that investigated the reciprocal sequence of interaction behaviors between teachers and students around disruptive behaviors in general education classrooms. The study was conducted in six elementary and two middle schools serving relatively large numbers of students who exhibited disruptive classroom behaviors. Two groups of students (grades 1-8) served as participants in the present study: target and criterion students. The 99 target students exhibited high rates of disruptive behaviors and/or severe forms of such behaviors whereas the 278 criterion students did not exhibit externalizing behaviors. The study was primarily descriptive in nature and focused on naturally occurring events in general education classrooms. Results of the study indicate that the probability of target students complying with teachers' attempts to correct their disruptive behavior was relatively low; teachers were more likely to respond to the disruptive behaviors of target students with a reprimand than in the case of criterion students; target students primarily responded negatively to teachers' attempts to correct their behaviors; and students were more likely to exhibit lower rates of disruptive behaviors when teachers were using direct instruction or effective instruction methods. (Contains 22 references.) (CR)

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Investigation of the Reciprocal Sequence of Interaction Behaviors of Teachers and Students around Disruptive Behaviors

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J. Ron Nelson, Ph.D.

Arizona State University

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PREFACE

This report summarizes the procedures and results from a three-year research project (initial career award) from the federal Office of Special Education Programs (OSEP). The purpose of the project was to investigate the reciprocal sequence of interaction behaviors between teachers and students around disruptive behaviors in general education classrooms. Two groups of students (1st through 8th grades) served as participants in the present study: target and criterion students. The target students exhibited high rates of disruptive behaviors and/or severe forms of such behaviors whereas the criterion students did not exhibit externalizing behaviors or other behavioral adjustment problems. The study was primarily descriptive in nature and focused on naturally occurring events in general education classrooms. The goal of the study was to provide basic information with which to develop new approaches for working with children who exhibit externalizing behaviors.

This document, and the work it represents is dedicated to the many professionals, parents, and children who participated in the project. It is my sincere hope that in some way these efforts will serve to improve the lives of all students as contributing members of our society. Additionally, I want to directly thank the mentors who inspired, and continue to inspire my efforts to improve the educational and life outcomes of students with behavioral disorders.

OVERVIEW

This report presents the results of a three-year study designed to detail the reciprocal sequence of interaction behaviors between teachers and students around disruptive behaviors in general education classrooms. The study was conducted in six elementary (K-6) and two middle (7-8) serving relatively large numbers of students who exhibited disruptive classroom behaviors. In this document, the importance of studying the reciprocal sequence of interaction behaviors between teachers and students around disruptive behaviors is discussed first. Next, the methods employed are described. This description is followed by a presentation of the results of the study. Finally, the results are discussed.

IMPORTANCE

The harsh truth is that growing numbers of children in America are exhibiting disruptive or externalizing behaviors (also referred to as antisocial, challenging, defiant, noncompliant, aggressive, and acting-out behaviors) beyond the occasional minor incident typical of most youth during the normal course of development. Such behaviors have become one of the most pressing issues facing schools (Nelson, 1996). The National Center for School Safety reports that 28,200 students and 5,200 teachers are physically attacked in our nation's secondary schools each month, and 19% of these victims require hospitalization (National Association of State Boards of Education, 1997). Further, growing numbers of students and teachers report that they are seriously concerned for their safety at school (National Association of State Boards of Education, 1997). These staggering statistics neither include students eligible for special education services nor the teachers employed to serve these students.

Disruptive behaviors not only confront schools and society with a serious challenge, but also have an adverse impact on individuals. Disruptive behaviors may interfere with academic and vocational success as well as contribute to chronic maladjustment and unhappiness (Kazdin, 1987). Converging evidence for the detrimental impact of disruptive behaviors comes from research on the post-school outcomes of students with emotional/behavioral disorders (EBD). This research has demonstrated that the social, academic, and vocational outcomes of students with EBD who exit school programs is rather bleak (Edgar & Levine, 1987; Neel, Meadow, Levine, & Edgar, 1988; Wagner, 1992; Wagner & Shaver, 1989). School dropout rates among these students range from 50% to 60%. Unemployment runs between 30% to 40%; if employed, the work secured is low paying and menial. Few enter any type of postsecondary educational training, and many are arrested at least once in the two years following their exit from school. The most recent data from the SRI National Longitudinal Transition Study documents that the EBD group experienced the highest unemployment, poorest work history, and highest number of social adjustment problems post-high school of any disability group (Wagner, 1992).

CONTEXT FOR THE PRESENT STUDY

What is known is that children who perform disruptive behaviors typically exhibit a sequence of such behaviors (e.g., off-task--arguing--defiance--physical aggression) that occur together in some manner. Behaviors that occur together or covary have been described or categorized as a functional response class (Evans & Meyer, 1985; Evans, Meyer, Kurkjian, & Kishi, 1988; Foxx, 1982; Millenson & Leslie, 1979; Voeltz & Evans, 1982; Wahler, 1975). A functional response class is defined as a group of topographically

PURPOSE OF THE PRESENT STUDY

It is surprising that there are virtually no reports in the literature that document the reciprocal nature of disruptive behaviors in light of empirical demonstrations showing that teachers behaviors influences student behaviors (e.g., Shores, Gunter, Denny, & Jack, 1993; Shores, Jack, Gunter, Ellis, DeBriere, & Wehby, 1993) and that certain aspects of normal child-adult behaviors such as vocalization (Gewirtz & Boyd, 1977), crying (Murray, 1979), smiling (Bates, 1976), activity level (Stevens-Long, 1973), speech (Bohannon & Marquis, 1977), and aggression (Faggot, 1984) systematically influence child-adult behaviors, and vice versa. The primary purpose of the present study was to detail the reciprocal sequence of interaction behaviors between teachers and students around disruptive behaviors. The study was primarily descriptive in nature and focused on naturally occurring events in general education classrooms. The goal was to provide basic information with which to develop new approaches for working with children who exhibit externalizing behaviors.

METHODS

Participants

Two groups of students (1st through 8th grades) served as participants in the present study: target and criterion students. The target students exhibited high rates of disruptive or externalizing behaviors and/or severe forms of such behaviors whereas the criterion students did not exhibit externalizing behaviors or other behavioral adjustment problems. All of the students were enrolled in the same six elementary (K-6) or two middle (7-8) schools located in a medium-sized city in the Pacific Northwest. All of the schools served the same geographic and enrollment area in the city (i.e., students served by the elementary schools transitioned to the two middle schools). No systematic process

was used to select schools. The schools were selected to maximize the amount of observation time (e.g., reduce travel time and coordinate observations across classrooms).

Target students. The target students were selected because teachers reported that they exhibited high rates of disruptive behaviors and/or severe forms of such behaviors (e.g., verbal, physical aggression, and defiance). A two-step process was used to select target students over the course of the three-year project. The first step centered on informing the key individuals (i.e., principals, school psychologists, and school counselors) at each school who had knowledge of potential participants for the study. These individuals were selected because teachers often contacted them regarding students who exhibit high rates of disruptive behaviors and/or severe forms of such behaviors. Specifically, the lead researcher met with the principals, school psychologists, and school counselors at each of the schools. The primary goals of the meeting were to discuss the (1) range of students we were interested in observing (i.e., any child, with or without, high incidence disabilities), (2) behavioral profile of the students we were interested in observing (i.e., exhibited high rates of and/or severe forms of disruptive behaviors e.g., aggression and defiance), (3) observation procedures (i.e., the observation period would begin with the teacher's overt response to the target student's disruptive behaviors and would end when the reciprocal interaction behaviors between the teacher and student regarding the student's disruptive behaviors ended e.g., student complied or teacher initiated a formal office referral and request for the student to leave the classroom), (4) voluntary parental/guardian informed consent and student assent procedures, (5) data management procedures (i.e., confidentiality and anonymity of participants), and (6) procedures for contacting us when they identified a student meeting our requirements for

participation. Each of these individuals was provided a manual that detailed this information.

The second step involved meeting directly with teachers once a school principal, school psychologist, or school counselor contacted us regarding a potential participant. This meeting was conducted each time a target student was identified. The primary goals of the meetings were to (1) ascertain the willingness of the teacher to participate in the study (four teachers refused to participate), (2) confirm that the student met our participant requirements (students met our participant requirements in all cases), (3) attain contact information with which to obtain voluntary parental/guardian informed consent and student assent (three parents and one student refused to participate), and (4) arrange and coordinate periods of the day in which to observe the student (after voluntary parental/guardian informed consent and student assent was obtained).

This resulted in a total of 99 (91 boys and 8 girls) target students that were observed over the course of the three-year project. These students yielded a total of 2,367 reciprocal sequences of interaction behaviors between teachers and target students around disruptive behaviors. Our goal was to observe approximately 20 reciprocal sequences of interaction behaviors between teachers and students around disruptive behaviors. The mean number of reciprocal sequences per student was 23.90 (SD = 7.6; Range = 10 to 31).

Fourteen (13 boys and 1 girl) of the target students were second graders, 13 (all boys) were third graders, 12 (all boys) were fourth graders, 14 (12 boys and 2 girls) were fifth graders, 16 (14 boys and 2 girls) were sixth graders, 15 (14 boys and 1 girl) were seventh graders, and 15 (13 boys and 1 girl) were eighth graders. Fifty-nine of the 99

target students had a current Individualized Education Program (IEP). Twenty-eight of these 59 target students were classified as behaviorally disordered, 17 were classified as other health impaired, 7 were classified as learning disabled, and 7 were classified as developmentally disabled. Additionally, we conducted school records search, modified from the School Archival Records Search (Walker, Block-Pedego, Todis, & Severson, 1991), to collect background information (i.e., overall achievement, attendance, number of schools attended, number of academic referrals, and number of behavioral referrals). This information is presented in Table 1.

Table 1

School Record Profiles for Target Students (n=99)

Variable	$\bar{X}$	SD	Range
Overall Achievement	71.24	34.36	4 to 113
Attendance (current year)	118.65	30.13	72 to 165
Schools Attended (to date)	2.37	1.38	1 to 6
Academic Referrals	0.72	1.02	0 to 3
Behavioral Referrals	1.12	1.74	0 to 8

Note. Overall achievement score represent a standard score with a mean of 100 and a standard deviation of 15.

Criterion students. In the final year of the project, teachers at the elementary and middle schools were asked to identify students in the first through eighth grades who did not exhibit externalizing behaviors or other behavioral adjustment problems. Teachers were asked to identify typical students rather than those students who demonstrated optimal behavioral adjustment. This resulted in the identification of 278 criterion students

(149 boys and 129 girls). Our goal was to observe approximately three reciprocal sequences of interaction behaviors between teachers and students around disruptive behaviors. These students yielded a total of 821 exchanges between teachers and criterion students. The mean number of exchanges was 2.95 (SD = 1.23; Range = 1 to 6).

Thirty-five (19 boys and 16 girls) were first graders, 36 (22 boys and 14 girls) were second graders, 32 (17 boys and 15 girls) were third graders, 36 (19 boys and 17 girls) were fourth graders, 38 (20 boys and 18 girls) were fifth graders, and 40 (21 boys and 19 girls) were sixth graders, 31 (16 boys and 15 girls) were seventh graders, and 30 (15 boys and 15 girls) were eighth graders. We did not conduct a school record search for the criterion students because it was not a part of our approved (District Internal Review Board) data collection procedures for these students.

Data Collection

In addition to general background information, two categories of information were collected for each reciprocal sequence of interaction behaviors between teachers and students (target and criterion students) around disruptive behaviors: (1) setting events and (2) teacher and student interaction behaviors. Background information collected included the (1) student and teacher identification numbers, (2) grade level of the student, (3) date and time (start of reciprocal sequence of interaction behaviors between the teacher and student around disruptive behaviors), and (4) names of observer and reliability observer (if applicable).

All observations were conducted in the students' assigned general education classroom(s). Thus, no observations were conducted in special education and special (e.g., physical education, art, and music) classes. Additionally, we collected data

continuously across class periods and days until we meet our respective observation goal (i.e., 20 and 3 for target and criterion students, respectively).

Setting events. Three types of setting events were recorded for each reciprocal sequence of interaction behaviors between teachers and students around disruptive behaviors: instructional context, content area, and teacher position. One of five instructional context factors was recorded for each exchange between the teacher and student around disruptive behaviors. The instructional context factors and associated definitions included:

1. Independent Work: Independent work was recorded when the student was or was expected to work independently on a specific activity.
2. Cooperative Learning: Cooperative learning was recorded when the student was working or was expected to work with a peer or group of peers.
3. Direct Instruction: Direct instruction was recorded when the teacher was teaching or interacting with the entire class.
4. Transition: Transition was recorded when students were transitioning from one activity to another within the classroom or from a classroom activity to another outside of the classroom, or vice versa.
5. Other: Other was recorded when the student was working or was expected to work on an activity not defined by the above codes.

One of six content areas was recorded for each reciprocal sequence of interaction behaviors between teachers and students around disruptive behaviors. The content areas included:

1. Reading: Reading was recorded when the student was participating or expected to participate in the translation of letters into words, and the comprehension of words, phrases, sentences, and paragraphs (i.e., use of readers for oral and/or silent reading; discussion of letters, sounds, and words; learning the alphabet; and answering of comprehension questions about passages read).
2. Mathematics: Mathematics was recorded when the student was participating or expected to participate in an activity whose goal was the teaching of numbers, numeric concepts, geometry, time, money, weight, metrics, measurement, story problems, etc.
3. Writing: Writing was recorded when the student was participating or expected to participate in an activity whose goal was to learn to write using either print or cursive script including activities whose goal was to teach spelling (i.e., written or oral).
4. Social Studies: Social studies was recorded when the student was participating or expected to participate in an activity whose goal was the teaching of history, geography, economics, psychology, or anthropological events.
5. Science: Science was recorded when the student was participating or was expected to participate in an activity whose goal was the learning of physical, geological, or biological science.
6. Other: Other was recorded when the student was participating or was expected to participate in an activity not defined by the above codes.

One of two teacher positions was recorded for each reciprocal sequence of interaction behaviors between teachers and students around disruptive behaviors. The teacher positions and associated definitions included:

1. Proximity: Proximity was recorded when the teacher was in close proximity to the student (< 5 feet) when he/she verbally indicated to the student that their (student) behavior was inappropriate.
2. Distant: Distant was recorded when the teacher was in the front of the classroom and was not in close proximity to the student (>5 feet) when he/she verbally indicated to a student that their (student) behavior was inappropriate.

Teacher and student interaction behaviors. An event sequence observation system was used to record the reciprocal sequences of interaction behaviors between teachers and students around disruptive behaviors (Bakeman & Quera, 1995). The observation system provided a sequential recording of the interaction behaviors of teachers and students but did not provide any time information (duration) for individual interaction behaviors. Furthermore, the interaction behaviors were mutually exclusive (only one interaction behavior applied to each sequence) and exhaustive (only one of the interaction behavior applied to each sequence, e.g., teacher reprimand followed by student noncompliance followed by teacher delivering a response cost followed by student verbal aggression).

One of seven interaction behaviors was coded for teachers for each reciprocal sequence of interaction behaviors between teachers and students around disruptive behaviors. The interaction behaviors coded for teachers and associated definitions included:

1. Command: Command was recorded when the teacher was observed instructing the student to direct his/her behavior toward an appropriate activity, e.g., "Please continue reading quietly in your book." or "I need you to pay attention."

2. Reprimand: Reprimand was recorded when the teacher asked the teacher to cease a disruptive behavior of concern, e.g., "Stop hitting" or "Stop teasing ...."
3. Ultimatum: Ultimatum was recorded when the teacher gave the student a verbal choice to stop a disruptive behavior of concern or the student would experience a designated response cost, e.g., "If you don't stop...then I will ...," or "I need you to be quiet or..."
4. Consequence: Consequence was recorded when the teacher gave the student a designated consequence for a disruptive behavior of concern, e.g., loss of a privilege or points.
5. Leave Request: Leave request was recorded when the teacher asked the student to remove him/herself from the classroom because of a disruptive behavior of concern. Included were requests to the principal's office or outside the classroom (in the hall).
6. Approval: Approval was recorded when the teacher responded in a positive manner to the student's behavior (disruptive or appropriate), e.g., social response such as a smile, "Thank you," "Good job," or tangible response such as a sticker or points.
7. Ignore: Ignore was recorded when the teacher made no apparent response within six or more seconds to the student's behavior (disruptive or appropriate).

One of six interaction behaviors was coded for students for each reciprocal sequence of interaction behaviors between teachers and students around disruptive behaviors. The interaction behaviors coded for students and associated definitions included

1. Compliance: Compliance was recorded when the student immediately (within five seconds) stopped exhibiting the disruptive behavior of concern following one of the teacher interaction behaviors.
2. Negative Response: Negative response was recorded when the student responded to the teacher's interaction behaviors with a negative verbal comment or criticism following one of the teacher interaction behaviors, e.g., "This is stupid," "I do not like you," or physical gesture (e.g., slam his/her book on the desk, slump in chair, or scowl).
3. Noncompliance: Noncompliance was recorded when the student continued to exhibit the disruptive behavior of concern following one of the teacher interaction behaviors without any overt verbal or physical response to the teacher.
4. Verbal Aggression: Verbal aggression was recorded when the student responded to one of the teacher interaction behaviors with verbal statements that are threatening, abusive, or profane in nature, e.g., "I know where you live" or "F_ you."
5. Physical Aggression: Physical aggression was recorded when the student responded to one of the teacher interaction behaviors with threatening physical behaviors (e.g., shaking fists or pointing finger) or dangerous physical behaviors directed toward the teacher or other individual.
6. Student Leaves: Student leaves was recorded when the student left the classroom on his or her own will (without the permission of the teacher) following one of the teacher interaction behaviors.

Seven coding guidelines were used to observe the reciprocal sequence of interaction behaviors between teachers and students around disruptive behaviors. The coding guidelines included:

1. Data collection was initiated when the teacher verbally indicated to a student that their behavior was inappropriate.
2. Data collection was terminated when the student stopped exhibiting the disruptive behavior of concern or when the student or teacher terminated their social interactions (i.e., student walked out of the classroom on his or her own will (without the permission of the teacher) following one of the teacher interaction behaviors or the teacher asked the student to leave the classroom because of their behavior).
3. Only one interaction behavior was coded for each sequence.
4. When the teacher or student exhibited more than one interaction behaviors before the other individual did so within a reciprocal sequence (i.e., one sequence of interaction behaviors between the teacher and student), only the last interaction behavior was coded.
5. In all cases, only exchanges regarding disruptive behaviors between the student and his/her primary teacher (elementary-aged students) or teachers (middle school-aged students) were coded.
6. In the case of target students, only the interaction behaviors of a teacher and one target student were recorded during a scheduled observation period. (This criterion was established because target students tended to exhibit relatively high rates of externalizing behaviors.)

7. In the case of criterion students, the interaction behaviors of the teacher and any of the identified criterion students in the classroom were recorded during a scheduled observation period. (This criterion was established because criterion students tended to exhibit relatively low rates of externalizing behaviors.)

Interobserver Agreement

Four paid observers conducted observations on the reciprocal sequence of interaction behaviors between teachers and students around disruptive behaviors for the three-year project year. No systematic process was used to assign observers to students and associated teachers. Rather, observers were assigned to students and teachers based on pragmatic factors such as scheduling and travel time.

A two-stage process was used to train observers to criterion levels of competence on the observation code. In the first stage, observers had to demonstrate mastery (95%) of the observation code on three consecutive quizzes. The quizzes were based on written scenarios that depicted behaviors related to the observation code. In the second stage, after observers had achieved mastery on three consecutive quizzes, they practiced their coding skills by simultaneously recording actual interactive behaviors between teachers and students around disruptive behaviors. Observers' then discussed their recording responses. Toward the end of the second stage, interobserver agreement scores were computed among observers and between the observer trainer (lead researcher) and individual observers. Practice sessions were continued until all observers consistently demonstrated 85% or greater agreement scores among themselves as well as with the observer trainer.

Interobserver agreement was calculated for 20 of the target students and 32 of the criterion students selected randomly across the three-years of the project. For each of the teacher and student interaction behaviors, as well as for the setting events, percent agreement for occurrences was calculated by dividing the number of agreements by the agreements plus disagreements and multiplying by 100. The average overall percent of interobserver agreement for the setting events was approximately 98% (range = 94% to 100%). The average overall percent interobserver agreement for occurrences across the interaction behaviors of teachers and students was approximately 84 % (range = 76% to 88%).

RESULTS

Conditional probabilities were computed for all setting events and teacher/student interaction behaviors. Recall that event recording procedures were used for both setting events and teacher/student interaction behaviors. In other words, the data consisted of a single stream of coded events without time information for individual events. Thus, conditional probabilities represent the relative frequency with which one event occurred dependent upon the occurrence of all other mutually exclusive events.

The results are divided into three sections. In the first section, a comparative analysis of the conditional probabilities of an exchange between teachers and students regarding disruptive behaviors at each sequential position (or lag) for target and criterion students is presented. A comparative analysis of the conditional probabilities of the occurrence of disruptive behaviors for target and criterion students under three types of setting events (i.e., instructional context, content area, and teacher proximity) is presented in the second section. The third section details the results of a descriptive analysis of the

conditional probabilities of interaction behaviors across each sequential lag for teachers and target students.

The 95% confidence interval was computed for each of the obtained conditional probabilities (Glass & Hopkins, 1984). The 95% confidence intervals not only provided us an estimate of the range within which the population value fell (more than 95 times out of 100), but also enabled us to make comparisons between and among the conditional probabilities. In other words, an overlap in the 95% confidence intervals for any two conditional probabilities would indicate that any difference was not statistically significant ($p > .05$). Conversely, no overlap in the 95% confidence intervals for any two conditional probabilities would indicate that the difference was statistically significant ($p < .05$).

It is important to note that were no statistically significant differences in the conditional probabilities in the interaction behaviors of both teachers and students across types of students (i.e., behaviorally disordered, other health impaired, learning disabled, developmentally delayed, and nondisabled), grades (1st through 8th), or teachers. Thus, these factors are not discussed further in the "results" section.

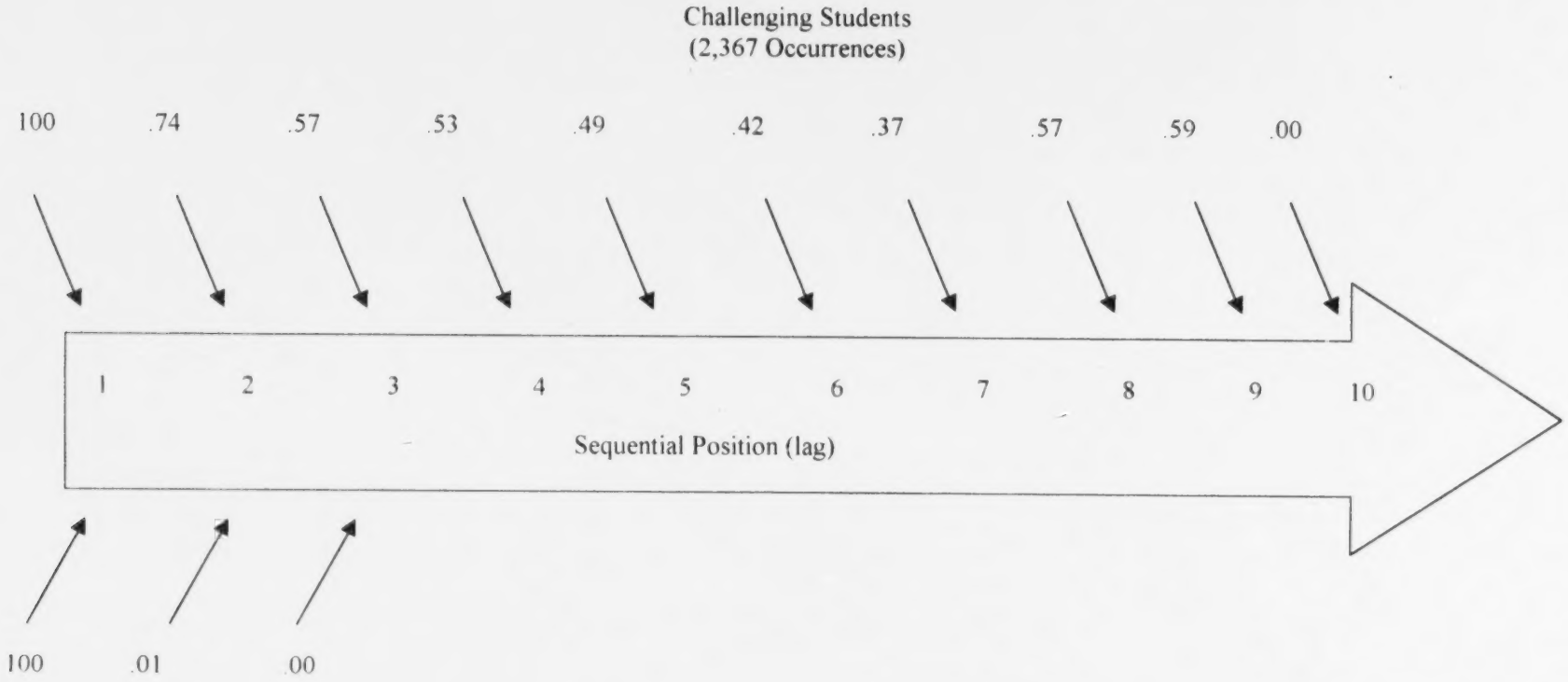
Conditional Probabilities of an Exchange between Teachers and Students at each Sequential Position

Data was collected on a total of 2,367 and 821 reciprocal sequences around the disruptive behaviors of target and criterion students, respectively. Figure 1 presents the conditional probabilities of continued teacher-student interactions regarding disruptive behaviors at each sequential position (or lag). Close inspection of Figure 1 shows that continued teacher-student interactions regarding disruptive behaviors for criterion students were essentially nonexistent. In contrast, continued teacher-student interactions for target

students remained relatively high (range = 37 to 74) from Sequential Position 1 through 9. Additionally, the mean number of Sequential Positions that occurred within each disruptive behaviors event for target students was 4.56 (SD = 2.3). (The mean and associated standard deviation for criterion students was essentially 1 and zero, respectively.)

Figure 1

Likelihood of Continued Teacher-Student Interactions around Disruptive Behavior at Each Sequential Position (or lag)



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A comparative analysis of the conditional probabilities of the interaction behaviors of teachers and students at the first sequential position are presented in Tables 2 and 3, respectively. (Note that a comparative analyses of the interaction behaviors of teachers and students across the remaining positions were not conducted because criterion students essentially complied with teachers' request for them (students) to correct their behaviors at the first lag.) Inspection of Table 2 reveals teachers, regardless of type, initially responded to the disruptive behaviors of students primarily with a command or reprimand. Although teachers were more likely to respond to the disruptive behaviors of both target and criterion students with these interaction behaviors, there were statistically significant differences (95% confidence intervals did not overlap) in teachers' interaction behaviors across target and criterion students. Teachers were more likely to use a command in response to the disruptive behaviors of criterion students than in the case of target students whereas teachers were more likely to use a reprimand in response to the disruptive behaviors of target students than in the case of criterion students (see Table 2).

Table 2

Comparison of the Conditional Probabilities of Teachers' Interaction Behaviors at the First Sequential Position

Teacher response	Target Students (n = 99) Percent Occurrence	Criterion Students (n = 278) Percent Occurrence
Command	56 (46 to 65)	83 (78 to 87)
Reprimand	37 (28 to 47)	16 (12 to 21)
Ultimatum	4 (2 to 10)	*
Response cost	2 (1 to 7)	*
Request to leave classroom	*	*
Ignore	*	*
Approval	*	*

Note. The total number of occurrences for the target and criterion students was 2,367 and 821, respectively. The numbers in parentheses reflect the 95% confidence intervals for the percent of occurrences across teachers' responses. An asterisk indicates that there were no occurrences of interaction behaviors or the 95% confidence limit encompassed zero. The lack of overlap in the 95% confidence intervals indicates that there were statistically significant ($p < .05$) differences in teachers' use of commands and reprimands in response to the disruptive behaviors of target and criterion students. There were also no statistically significant ($p > .05$) differences in the percent occurrences across the grades.

Inspection of Table 3 reveals that there were statistically significant differences in the interaction behaviors of target and criterion students. Target students were more likely to respond to the initial attempts of teachers to correct their (student) behaviors with a negative response or noncompliance than were criterion students. In contrast, criterion students essentially corrected their behaviors when asked to do so by the teacher.

Table 3

Comparison of the Conditional Probabilities of Target and Criterion Students' Interaction Behaviors at the First Sequential Position

	Target Students (n = 99)	Criterion Students (n = 278)
Student response	Percent Occurrence	Percent Occurrence
Compliance	24 (17 to 33)	93 (89 to 95)
Negative response	54 (44 to 63)	6 (4 to 9)
Noncompliance	18 (12 to 27)	*
Verbal aggression	3 (1 to 8)	*
Physical aggression	*	*
Student leaves the classroom	*	*

Note. The total number of occurrences for the target and criterion students was 2,367 and 821, respectively. The numbers in parentheses reflect the 95% confidence intervals for the percent of occurrences across teachers' responses. An asterisk indicates that there were no occurrences of interaction behaviors or the 95% confidence limit encompassed zero. A lack of overlap in the 95% confidence intervals indicates that there were statistically significant ($p < .05$) differences in target and criterion students' rates of compliance and performance problems. There were also no statistically significant ($p > .05$) differences in the percent occurrences across the grades.

Conditional Probabilities for the Occurrence of Disruptive Behaviors across Setting Events

Recall that three types of setting events were recorded for each exchange between the teacher and student around disruptive behaviors. The setting events included the instructional context, content area, and teacher position.

Instructional context. Conditional probabilities of the occurrence of disruptive behaviors for target and criterion students under the five instruction contexts (i.e., independent learning, cooperative learning, direct instruction, and other) are presented in Table 4. Disruptive behaviors were least likely to occur (95% confidence intervals did not overlap with independent learning, cooperative learning, and transitions) during periods in which the teacher was directly teaching the students (see Table 4). Additionally, close inspection of Table 4 reveals that there were no statistically significant differences between target and criterion students in the occurrence of disruptive behaviors across the instructional contexts.

Table 4

Conditional Probabilities of the Occurrence of Disruptive behaviors for Target and Criterion Students across Instructional Contexts

Instructional Context	Target Students (n = 99) Percent Occurrence	Criterion Students (n = 278) Percent Occurrence
Independent Seat Work	38 (29 to 48)	30 (25 to 36)
Cooperative Learning	21 (14 to 30)	33 (28 to 39)
Direct Instruction	12 (7 to 25)	21 (17 to 26)
Transition	25 (18 to 34)	16 (12 to 21)
Other	4 (2 to 10)	6 (4 to 9)

Note. The total number of occurrences of disruptive behaviors for the target and criterion students was 2,367 and 821, respectively. The numbers in parentheses reflect the 95% confidence intervals for the conditional probabilities across instructional contexts. The overlap in the 95% confidence intervals for target and criterion students indicates that there were no statistically significant ($p > .05$) differences across all of the instructional context factors. There were also no statistically significant ($p > .05$) differences in the percent occurrences across the grades.

Content area. Conditional probabilities of the occurrence of disruptive behaviors for target and criterion students under six content areas (i.e., reading, mathematics, writing, science, social studies, and other) were computed. Table 5 presents the conditional probabilities of the occurrence of disruptive behaviors under each of the content areas. Disruptive behaviors were more likely to occur (95% confidence interval did not overlap with mathematics, writing, science, and social studies) during periods in

which students were reading (see Table 5). Additionally, close inspection of Table 5 shows that there were no statistically significant differences between target and criterion students in the occurrence of disruptive behaviors across the content areas.

Table 5

Conditional Probabilities of the Occurrence of Disruptive behaviors for Target and Criterion Students across Content Areas

	Target Students (n = 99)	Criterion Students (n = 278)
Content Area	Conditional Probability	Conditional Probability
Reading	44 (35 to 54)	38 (32 to 44)
Mathematics	22 (15 to 31)	25 (20 to 30)
Writing	16 (10 to 24)	17 (13 to 22)
Science	12 (7 to 20)	9 (5 to 11)
Social studies	8 (4 to 15)	7 (6 to 13)
Other	8 (4 to 15)	6 (4 to 9)

Note. Total number of occurrences for the target and criterion students were 1,698 and 573, respectively (total number of occurrences do not include transitions). The numbers in parentheses reflect the 95% confidence intervals for the percent of occurrences across content areas. The overlap in the 95% confidence intervals for target and criterion students indicates that there were no statistically significant ($p > .05$) differences across all of the content areas. There were also no statistically significant ($p > .05$) differences in the percent occurrences across the grades.

Teacher proximity. Conditional probabilities of the occurrence of disruptive behaviors for target and criterion students under two teacher positions (proximity and

distant) were computed. There were no statistically significant differences in the conditional probabilities between proximity and distant teacher positions (See Table 6). Additionally, close inspection of Table 6 revels that there were no statistically significant differences between target and criterion students in the occurrence of disruptive behaviors across the teacher positions.

Table 6

Conditional Probabilities of the Occurrence of Disruptive behaviors for Target and Criterion Students across Teacher Positions (proximity and distant)

	Target Students (n = 99)	Criterion Students (n = 278)
Teacher Position	Conditional Probability	Percent Occurrence
Proximity	54 (44 to 63)	53 (37 to 56)
Distant	46 (47 to 59)	47 (41 to 53)

Note. The total number of occurrences for the target and criterion students was 2,367 and 821, respectively. The numbers in parentheses reflect the 95% confidence intervals for the percent of occurrences across teacher positions. The overlap in the 95% confidence intervals for target and criterion students indicates that there were no statistically significant ($p > .05$) differences across teacher positions. There were also no statistically significant ($p > .05$) differences in the percent occurrences across the grades.

Conditional Probabilities of Interaction Behaviors across Each Sequential Position for Teachers and Target Students

It is important to note that we did not consider the conditional probabilities of teachers' and target students' interaction behaviors at the eighth and ninth sequential positions. We did not consider these probabilities because a common rule of thumb suggests that there should be five expected (not observed) occurrences of interaction behaviors per cell to conduct any descriptive or inferential analyses (Wickens, 1989). The

eight and ninth sequential positions were not considered because there were only 22 and 13 occurrences of behaviors, respectively, when 35 were required (i.e., seven cells X 5 expected occurrences per cell)

Additionally, an overall mean conditional probability across the seven sequential positions to determine those points in time in which the relative occurrence of interaction behaviors of teachers and students varied significantly (statistically: $p < .05$). In Tables 7 and 8, the conditional probability is underlined once if it fell above the critical range ($p > .05$) of the overall mean conditional probability for the interaction behaviors across lags and twice if it fell below

Teachers. Table 7 presents the conditional probabilities for the interaction behaviors of teachers across the seven sequential positions. Close inspection of the relative conditional probabilities for the interaction behaviors presented in Table 7 reveals that teachers, regardless of sequential position, tended to respond to the disruptive behaviors of target students with either a command or reprimand. Relative to the overall mean conditional probabilities for the interaction behaviors, teachers were more likely to use a command at first and second sequential positions and less likely to do so at the fifth and sixth. Furthermore, teachers were more likely to us a reprimand at the first sequential position. In all other cases, teachers use of the interaction behaviors remained constant across sequential positions.

Table 7

Conditional Probabilities of Teachers' Interaction Behaviors across Sequential Positions

Teacher Response	Overall Mean	Lag 1 [2,367]	Lag 2 [1,674]	Lag 3 [961]	Lag 4 [507]	Lag 5 [250]	Lag 6 [104]	Lag 7 [38]
Command	43 (40 to 46)	56 (54 to 58)	45 (43 to 47)	46 (43 to 49)	36 (32 to 40)	33 (27 to 39)	28 (20 to 36)	55 (39 to 71)
Reprimand	24 (21 to 27)	37 (35 to 39)	25 (23 to 27)	21 (19 to 23)	20 (16 to 24)	20 (14 to 26)	19 (11 to 27)	26 (10 to 42)
Ultimatum	7 (4 to 10)	4 (2 to 6)	6 (4 to 8)	6 (3 to 9)	9 (5 to 13)	8 (2 to 14)	13 (5 to 21)	*
Response cost	8 (5 to 11)	2 (1 to 3)	6 (4 to 8)	7 (4 to 10)	11 (7 to 15)	16 (10 to 26)	13 (5 to 21)	*
Request to leave classroom	10 (7 to 13)	*	4 (2 to 6)	8 (5 to 11)	8 (4 to 12)	8 (2 to 14)	20 (12 to 28)	19 (3 to 35)
Ignore	7 (4 to 10)	*	10 (8 to 12)	8 (5 to 11)	11 (7 to 15)	10 (4 to 16)	7 (1 to 15)	*
Approval	3 (1 to 6)	*	4 (2 to 6)	4 (1 to 7)	5 (1 to 9)	5 (1 to 9)	*	*

Note. Numbers in brackets reflect the total number of reciprocal social exchanges between teachers and target students around disruptive behaviors. Numbers in parentheses reflect the 95% confidence intervals for the conditional probability. The conditional probability is underlined once if it fell above the critical range ($p > .05$) of the overall mean conditional probability for the interaction behaviors across lags and twice if it fell below. An asterisk indicates that there were no occurrences of interaction behaviors or the 95% confidence intervals for the conditional probability encompassed zero.

Target students. Table 8 presents the conditional probabilities for the interaction behaviors of target students across the seven sequential positions. Close inspection of the relative conditional probabilities for the interaction behaviors presented in Table 8 reveals that target students, regardless of sequential position, tended to respond to teachers' attempts to correct their (student) behaviors with a negative response. Relative to the overall mean conditional probabilities for the interaction behaviors, target students were more likely to comply at the first sequential position whereas they were less likely to respond negatively. Furthermore, target students were more likely to respond to teachers' attempt to correct their (student) behaviors with physical aggression or by leaving at the sixth sequential position. This was also true in the latter case at the seventh sequential position. In all other cases, target students' interaction behaviors remained constant across sequential positions.

Table 8

Conditional Probabilities of Target Students' Interaction Behaviors across Sequential Positions

Student Response	Overall Mean	Lag 1 [2,367]	Lag 2 [1,674]	Lag 3 [961]	Lag 4 [507]	Lag 5 [250]	Lag 6 [104]	Lag 7 [38]
Compliance	11 (8 to 14)	23 (21 to 25)	12 (10 to 14)	14 (11 to 17)	6 (2 to 10)	5 (1 to 11)	14 (6 to 22)	*
Negative response	63 (60 to 66)	54 (52 to 56)	66 (64 to 68)	64 (61 to 67)	62 (58 to 66)	72 (66 to 78)	68 (60 to 76)	58 (42 to 74)
Noncompliance	16 (13 to 19)	18 (16 to 20)	17 (15 to 19)	16 (13 to 19)	16 (12 to 20)	13 (7 to 20)	8 (1 to 16)	25 (9 to 41)
Verbal aggression	5 (2 to 8)	4 (2 to 6)	4 (2 to 6)	5 (2 to 8)	6 (2 to 10)	8 (2 to 14)	4 (1 to 10)	5 (1 to 14)
Physical aggression	*	*	*	*	*	*	3 (1 to 9)	*
Student leaves	*	*	*	*	*	*	3 (1 to 9)	11 (1 to 20)

Note. Numbers in brackets reflect the total number of reciprocal social exchanges between teachers and target students around disruptive behaviors. Numbers in parentheses reflect the 95% confidence intervals for the conditional probability. The conditional probability is underlined once if it fell above the critical range ($p > .05$) of the overall mean conditional probability for the interaction behaviors across lags and twice if it fell below. An asterisk indicates that there were no occurrences of interaction behaviors or the 95% confidence intervals for the conditional probability encompassed zero.

DISCUSSION

Disruptive or externalizing behaviors represent one of the greatest challenges to schools and communities today. Such behaviors not only confront schools and society with a serious challenge, but also have an adverse impact on individuals. Disruptive behaviors may interfere with academic and vocational success as well as contribute to chronic maladjustment and unhappiness (Kazdin, 1987). The primary purpose of the present study was to detail the reciprocal interaction behaviors of teachers and students around disruptive behaviors. The study was primarily descriptive in nature and focused on naturally occurring events in general education classrooms. The goal was to provide basic information with which to develop new approaches for working with children who exhibit externalizing behaviors.

There are a number of findings that I would like to highlight. The first finding I would like to highlight centers on the somewhat unstoppable nature of the disruptive behaviors of target students. The probability that these students, regardless of disability classification (or not), age, etc.) complied with teachers' attempts to correct their (students) disruptive behaviors across sequential positions (or lags) was relatively low. Further, the mean number of sequential reciprocal interactions between teachers and students was above four. These findings are especially striking when contrasted with criterion students. Criterion students essentially complied with teachers' initial attempts to correct their (students) disruptive behaviors 100 percent of the time. The findings of the present study are consistent with research that points to the stability of disruptive behaviors from early childhood (approximately age 8) to late adolescence and adulthood (e.g., Huesmann, Eron, Lefkowitz, & Walder, 1984). The findings may also, at least in part, provide insight into why teachers struggle with and are generally unwilling to work with students who exhibit disruptive behaviors.

The second finding that I would like to highlight focuses on differences in teachers' initial attempts to correct the disruptive behaviors of target and criterion students. Although teachers were more likely to use commands in response to the disruptive behaviors of both target and criterion students; they (teachers) tended to respond differently to target and criterion students. Teachers' were more likely to respond to the disruptive behaviors of target students with a reprimand than in the case of criterion students. Further, teachers were more likely to respond to the disruptive behaviors of criterion students with a command than in the case of target students. This finding is consistent with previous research that suggests that teachers tend to interact more negatively with children with behavioral disorders (Shores et al., 1993). Of course, the generally negative approach of teachers must be viewed within a reciprocal context. That is, children who exhibit disruptive behaviors typically engage in behaviors that are offensive to those with whom they interact. It is the reciprocal nature of this interaction that often results in the maintenance and/or escalation in terms of intensity and the problematic nature of the behaviors.

The third finding I would like to highlight centers on the relative stability of the interaction behaviors of teachers and students across sequential positions. Teachers tended to respond to the disruptive behaviors of target students with either commands or reprimands. More specifically, teachers use of commands only fell below the overall mean average at the fifth and sixth sequential positions and, with one exception (i.e., teachers use of reprimands fell above the overall mean at the first sequential position) their use of reprimands remained unchanged across sequential positions. Additionally, with few exceptions, teachers' use of ultimatums, response cost, requests to leave the classroom, and ignoring remained constant across sequential positions.

Like teachers, the interaction behaviors of target students remained relatively constant across sequential positions. Target students primarily responded negatively to teachers' attempts to correct their (students) behaviors. With the exception of the first sequential position (i.e., students' use of negative responses fell above the overall mean), target students use of negative responses remained constant. Additionally, with few exceptions, target students' use of the other interaction behaviors (i.e., compliance, noncompliance, verbal aggression, physical aggression, and student leaves) remained relatively constant across sequential positions.

A fourth finding I would like to highlight focuses on the general stability of target students' relatively limited use of verbal aggression across sequential positions and their use of physical aggression only at the sixth sequential position. This finding is in contrast with previous research which suggests that behavioral episodes of problem behaviors are typically constituted by a behavioral sequence in which the individuals responses become more intense and problematic (e.g., Evans et al., 1988; Millensen & Leslie, 1979). It is also in contrast to the assumptions regarding escalating nature of disruptive behaviors underlying many staff development program designed to help teachers manage disruptive or acting-out behaviors (e.g., Colvin, 1990).

A final finding that I would like to highlight centers on the failure of setting events to have a differential effect on the occurrence of the disruptive behaviors of target and criterion students. In all cases, target and criterion students exhibited similar rates of disruptive behaviors. Students were more likely to exhibit lower rates of disruptive behaviors when teachers were using direct instruction or effective instruction methods. This finding is consistent with previous research that found that students with behavioral disorders exhibited higher rates of on-task when direction instruction methods were used by the teachers (Nelson, Johnson, & Marchand-Martella,

1997). Additionally, both target and criterion students were more likely to exhibit disruptive behaviors during reading. This finding is troubling given the increasing literacy demands required of contemporary students and the concomitant reading difficulties of students who exhibit disruptive behaviors (Snow, Burns, Griffin, 1998).

Finally, it is important to note that the findings are limited in three primary aspects. First, the interaction behaviors of teachers and students should not be generalized beyond the methodology employed in the present study. The interaction behaviors of teachers and students should be viewed within the conditions reported. Future research should examine the interaction behaviors of teachers and students around disruptive behaviors using alternative methodologies. For example, it would be of interest to preserve time information for each of the interaction behaviors and to examine the collateral effects of these behaviors on those of other students in the classroom. Second, all of the students were enrolled in the same six elementary or two middle schools in one geographic location. Thus inferences regarding the generality of the findings must be made cautiously until further research is conducted in other geographic locations and across a diverse group of individuals. Finally, previous research conducted with families has found that increases in the intensity of the interaction behaviors of children and adults occur over an extended time period. Thus, our assertion that the interaction behaviors of teachers and children remained relatively stable must be viewed within the limited timeframe of the present study. Future research that is longitudinal in nature would help illuminate whether the interaction behaviors of children and teachers escalate over time.

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